

Part of Supplemental Examiner's Amendment

1 To overcome this obstacle, alternate technologies have been developed to
2 locate and track users or objects in an indoor environment. One such system uses
3 tags placed on the items that are to be tracked. In an electronic sense, the tags can
4 be either active or passive, and they communicate with base stations. The base
5 stations are physically linked together through a wired or wireless network. Each
6 tag transmits a unique code to identify itself. The location of the tag can thereby
7 be determined to be in the vicinity of the base station with which the tag last
8 communicated.

9 Such tag-based tracking and location systems require a significant
10 installation of specialized base stations. A tag-based system can only determine
11 the location of the tags as being "near" a particular base station. As a result, a
12 large number of base stations must be installed to achieve a sufficiently high
13 resolution. Furthermore, obtrusive tags have to be placed on every item that is to
14 be tracked or located, and in the case of infrared tags, the system operates only
15 when there is a line of sight between the tag and a base station. For these reasons,
16 tag-based systems have shown very limited success.

17 Another technology has been developed which uses radio frequency
18 transmissions from base stations and mobile units to track the location of mobile
19 units. This technology is described in U.S. Patent Application Number
KB 20 09/513155, entitled "Using a Derived Table of Signal Strength Data to
21 Locate and Track a User In a Wireless Network, and in U.S. Patent Application
KB 22 Number 09/513355, entitled "Locating and Tracking a User in a
23 Wireless Network Through Environmentally Profiled Data."

24 In this system, a Wireless Local Area Network (WLAN) is utilized for
25 locating and tracking users. A WLAN consists of base stations connected to a

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1 location (x meters, y meters from front door of Building A). If the wireless
2 network system information is organized in a directory structure that associates a
3 geographical region with each directory level (state, county, city, building, office,
4 etc.), the location may be determined as a geographical unit, e.g., office 2216,
5 Building A, etc. Such a geographically based information management system is
6 described in U.S. Patent Application Number 09/766505, entitled
7 "Information Management and Processing In a Wireless Network."

8 Mobile A 218 then determines a system time at step 302. This is
9 accomplished by accessing the system time of the server 202 to which Mobile A
10 218 is connected.

11 At block 304, Mobile A 218 determines if a user has been active on Mobile
12 A 218 for a specified time period prior to the location determination block 300.
13 For instance, if the specified time period is two minutes, then Mobile A 218 is
14 deemed to be active if a user operation has occurred in the two minutes prior to the
15 determination block 300. If so ("Yes" branch, block 304), then a user name of a
16 user on Mobile A 218, is transmitted to the server 202 together with the location
17 coordinates, the time of the location determination, and an active signal indicating
18 that Mobile A 218 is active (block 306). If the user has not operated Mobile A 218
19 during the specified time period ("No" branch, block 304), the active signal is not
20 transmitted. In that case, only the user name, location coordinates and time of the
21 location determination are transmitted to the server 202 at block 308. When the
22 active signal is received at the server 202, the server 202 indicates in the user
23 database 206 that Mobile A 218 is active. Contemporaneously therewith, the
24 server 202 clears any other active signal that may be present for a computer used
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